

Amendments to the Claims

1. (Currently amended) A reactive precursor feeding manifold assembly, comprising:

a body comprising a plenum chamber;

a first valve proximate the body, the first valve being a multi-inlet ~~multi-inlet~~ valve having at least two inlets and at least one outlet, a first inlet of the first valve being configured for connection with a reactive precursor source, at least one valve outlet feeding to a precursor inlet to the plenum chamber, the first valve being the only valve associated with the precursor inlet;

a second valve associated with a purge gas stream having a purge gas inlet to the plenum chamber received upstream of the plenum chamber precursor inlet, the second valve being a single-inlet valve having a single inlet and a single outlet; and

the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber.

2. (Previously presented) The manifold assembly of claim 1 comprising a plurality of multi-inlet valves having respective precursor inlets to the plenum chamber, the plenum chamber purge gas stream inlet being upstream of all precursor inlets to the plenum chamber.

3. (Previously presented) The manifold assembly of claim 1 wherein the first valve has only two inlets and only one outlet.

4. (Previously presented) The manifold assembly of claim 1 wherein the first valve has only two inlets and only one outlet, a second inlet of the first valve being configured for connection with a purge gas line.

5. (Previously presented) The manifold assembly of claim 4 wherein the second inlet of the first valve is upstream of the first inlet of the first valve.

6. (Previously presented) The manifold assembly of claim 4 comprising a plurality of multi-inlet valves and having respective precursor inlets to the plenum chamber, the plenum chamber purge gas stream inlet being upstream of all precursor inlets to the plenum chamber.

7. (Original) The manifold assembly of claim 1 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

8. (Previously presented) The manifold assembly of claim 1 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, the first valve when the body is so mounted being at least partially received within peripheral lateral confines of a chamber housing of the substrate processing chamber.

9. (Previously presented) The manifold assembly of claim 8 wherein the first valve when the body is so mounted is totally received within peripheral lateral confines of said chamber housing.

10. (Previously presented) The manifold assembly of claim 1 comprising:
a plurality of multi-inlet valves having respective precursor inlets to the plenum chamber, the plenum chamber purge gas stream inlet being upstream of all precursor inlets to the plenum chamber;

structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, the respective multi-inlet valves when the body is so mounted being at least partially received within peripheral lateral confines of a chamber housing of the substrate processing chamber.

11. (Previously presented) The manifold assembly of claim 10 wherein the multi-inlet valves when the body is so mounted are totally received within peripheral lateral confines of said chamber housing.

12. (Previously presented) The manifold assembly of claim 1 wherein the plenum chamber is longitudinally elongated having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end, the plenum chamber purge gas inlet being proximate the first end, the plenum chamber outlet being proximate the second end.

13. (Previously presented) The manifold assembly of claim 12 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

14. (Previously presented) A reactive precursor feeding manifold assembly, comprising:

a body comprising a plenum chamber;

a first precursor feed stream on the body in fluid communication with the plenum chamber at a first precursor inlet to the plenum chamber;

a second precursor feed stream on the body in fluid communication with the plenum chamber at a second precursor inlet to the plenum chamber;

a purge gas stream on the body in fluid communication with the plenum chamber at a purge gas inlet to the plenum chamber which is upstream of both the first and the second plenum chamber precursor inlets and angled from the plenum chamber precursor inlets such that a purge-gas flow through the purge gas inlet provides a venturi effect within the plenum chamber relative to the first and second precursor inlets; and

the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber.

15. (Previously presented) The manifold assembly of claim 14 wherein the plenum chamber purge gas inlet is angled from the plenum chamber precursor inlets by from about 80° to 100°.

16. (Previously presented) The manifold assembly of claim 14 wherein the plenum chamber purge gas inlet is angled from the plenum chamber precursor inlets by from about 89° to 91°.

17. (Previously presented) The manifold assembly of claim 14 further comprising a first valve in the first precursor feed stream proximate the body, and a second valve in the second precursor feed stream proximate the body.

18. (Previously presented) The manifold assembly of claim 14 further comprising a 3-way valve in the first precursor feed stream proximate the body.

19. (Original) The manifold assembly of claim 14 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

20. (Previously presented) The manifold assembly of claim 14 wherein the plenum chamber is longitudinally elongated having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end, the plenum chamber purge gas inlet being proximate the first end, the plenum chamber outlet being proximate the second end.

21. (Previously presented) The manifold assembly of claim 20 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

22. (Currently amended) A reactive precursor feeding manifold assembly, comprising:

a body comprising a plenum chamber, the plenum chamber being longitudinally elongated having a longitudinal axis, the plenum chamber having a first end and a second end, the first end being disposed at a first endpoint of the longitudinal axis end and a the second end being disposed at an opposing second endpoint of the longitudinal axis; axis end,

a plurality of respective precursor feed streams on the body in fluid communication with the plenum chamber at respective precursor inlets to the plenum chamber;

a purge gas stream on the body in fluid communication with the plenum chamber at a purge gas inlet to the plenum chamber which is upstream of all precursor inlets to the plenum chamber, the plenum chamber purge gas inlet being proximate the first end and being angled from all precursor inlets to the plenum chamber; and

the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber, the plenum chamber outlet being proximate the second end, the longitudinal axis of the plenum chamber being substantially vertical when the plenum chamber outlet is connected with the substrate processing chamber.

23. (Original) The manifold assembly of claim 22 wherein no plenum chamber precursor inlet is angled from any other plenum chamber precursor inlet.

24. (Previously presented) The manifold assembly of claim 23 wherein the plenum chamber purge gas inlet is angled from the plenum chamber precursor inlets by from about 80° to 100°.

25. (Previously presented) The manifold assembly of claim 23 wherein the plenum chamber purge gas inlet is angled from the plenum chamber precursor inlets by from about 89° to 91°.

26. (Original) The manifold assembly of claim 22 further comprising a valve in the respective precursor feed streams proximate the body.

27. (Original) The manifold assembly of claim 22 further comprising a 3-way valve in the respective precursor feed streams proximate the body.

28. (Original) The manifold assembly of claim 22 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

29. (Cancelled)

30. (Previously presented) The manifold assembly of claim 22 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

31. (Previously presented) A reactive precursor feeding manifold assembly, comprising:

a body comprising a plenum chamber, the body having a first end and an opposing second end;

a plurality of precursor feed streams on the body in fluid communication with the plenum chamber at respective precursor inlets to the plenum chamber;

a purge gas stream on the body in fluid communication with the plenum chamber at a purge gas inlet to the plenum chamber which is proximate the first end and disposed upstream of the plenum chamber precursor inlets;

the body comprising a plenum chamber outlet disposed at the second end and configured to connect with a substrate processing chamber; and

structure on the body configured to mount the second end to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

32. (Original) The manifold assembly of claim 31 wherein the structure comprises a projection on the body.

33. (Original) The manifold assembly of claim 31 wherein the structure comprises a flange.

34. (Original) The manifold assembly of claim 31 further comprising a valve in the respective precursor feed streams proximate the body.

35. (Original) The manifold assembly of claim 31 further comprising a 3-way valve in the respective precursor feed streams proximate the body.

36. (Previously presented) The manifold assembly of claim 31 further comprising a 3-way valve in the respective precursor feed streams proximate the body, one inlet to the 3-way valve being configured for connection with the respective precursor feed stream, another inlet to the 3-way valve being configured for connection with a purge gas line, the another inlet being upstream of the one inlet.

37. (Previously presented) The manifold assembly of claim 31 wherein the plenum chamber is longitudinally elongated having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end, the plenum chamber purge gas inlet being proximate the first end, the plenum chamber outlet being proximate the second end.

38. (Previously presented) The manifold assembly of claim 37 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

39. (Previously presented) A reactive precursor feeding manifold assembly, comprising:

an elongate body comprising an elongate plenum chamber, the plenum chamber having a longitudinal axis;

a plurality of precursor feed streams on the body in fluid communication with the plenum chamber at respective precursor inlets to the plenum chamber received along the longitudinal axis;

a purge gas stream on the body in fluid communication with the plenum chamber at a purge gas inlet to the plenum chamber which is upstream of the plenum chamber precursor inlets;

the body comprising a plenum chamber outlet configured to connect with a substrate processing chamber, the plenum chamber outlet being substantially vertically opposed relative to the purge gas inlet; and

structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, and with the longitudinal axis being substantially vertical.

40. (Original) The manifold assembly of claim 39 wherein the structure comprises a projection on the body.

41. (Original) The manifold assembly of claim 39 wherein the structure comprises a flange.

42. (Previously presented) The manifold assembly of claim 39 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

43. (Original) The manifold assembly of claim 39 further comprising a valve in the respective precursor feed streams proximate the body.

44. (Original) The manifold assembly of claim 39 further comprising a 3-way valve in the respective precursor feed streams proximate the body.

45. (Previously presented) A reactive precursor feeding manifold assembly, comprising:

an elongate body comprising an elongate plenum chamber, the plenum chamber having a longitudinal axis, the plenum chamber having a first longitudinal axis end and a second longitudinal axis end;

the plenum chamber comprising a plurality of precursor inlets received along the longitudinal axis;

respective precursor feed streams on the body feeding to the plenum chamber precursor inlets, the respective precursor feed streams including an elongated segment joining with its plenum chamber precursor inlet and which is oriented substantially normal to the longitudinal axis;

respective multi-inlet valves positioned proximate the body in the respective precursor feed streams, the respective multi-inlet valves having at least two valve inlets and at least one valve outlet, one of the valve inlets being configured for connection with a reactive precursor source, another of the valve inlets being configured for connection with a purge gas line;

a purge gas inlet to the plenum chamber at the first longitudinal axis end and upstream of all precursor inlets to the plenum chamber;

a purge gas stream on the body feeding to the purge gas inlet through a single-inlet valve, the purge gas stream including an elongated segment joining with the purge gas inlet and which is substantially aligned on the longitudinal axis; and

the body comprising a plenum chamber outlet at the second longitudinal axis end configured to connect with a substrate processing chamber.

46. (Previously presented) The manifold assembly of claim 45 wherein the multi-inlet valves have only two inlets and only one outlet.

47. (Original) The manifold assembly of claim 45 wherein the another valve inlet is upstream of the one valve inlet.

48. (Original) The manifold assembly of claim 45 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet.

49. (Original) The manifold assembly of claim 48 wherein the structure is configured to mount the body to a substrate processing chamber with the longitudinal axis being substantially vertical.

50. (Original) The manifold assembly of claim 48 wherein the structure comprises a projection on the body.

51. (Original) The manifold assembly of claim 48 wherein the structure comprises a flange.

52. (Previously presented) The manifold assembly of claim 45 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, the respective multi-inlet valves when the body is so mounted being at least partially received within peripheral lateral confines of a chamber housing of the substrate processing chamber.

53. (Previously presented) The manifold assembly of claim 52 wherein the multi-inlet valves when the body is so mounted are totally received within peripheral lateral confines of said chamber housing.

54. (Previously presented) The manifold assembly of claim 45 wherein the plenum chamber purge gas inlet is on the longitudinal axis.

55. (Previously presented) The manifold assembly of claim 45 wherein,
the multi-inlet valves have only two inlets and only one outlet;
the another valve inlet is upstream of the one valve inlet; and
the plenum chamber purge gas inlet is on the longitudinal axis.

56. (Previously presented) The manifold assembly of claim 55 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, and wherein the structure comprises a projection on the body.

57. (Previously presented) The manifold assembly of claim 55 further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, and wherein the structure comprises a flange.

58. (Previously presented) The manifold assembly of claim 45 wherein, the multi-inlet valves have only two inlets and only one outlet; the another valve inlet is upstream of the one valve inlet; and further comprising structure on the body configured to mount the body to a substrate processing chamber with the plenum chamber outlet proximate to and connected with a substrate processing chamber inlet, the structure being configured to mount the body to a substrate processing chamber with the longitudinal axis being substantially vertical.

59. (Original) The manifold assembly of claim 58 wherein the structure comprises a projection on the body.

60. (Original) The manifold assembly of claim 58 wherein the structure comprises a flange.

61. (Previously presented) The manifold assembly of claim 58 wherein the plenum chamber purge gas inlet is on the longitudinal axis.